ATLONA®
Connecting technology to your world

Atlona HDMI Extender over Single CAT5/6 up to 130 feet with 3D Support

AT-HD4-SI40SR

AT-HD4-SI40SR
HDMI IN
MODE
RoHS 2002/95/EC
CAT5/6/7 OUT
+5V DC
CAT5/6/7 IN
HDMI OUT
MAX
EQ
MIN

User Manual

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atlona.com

Table of Contents

1. Introduction 3
2. Package Contents 3
3. Features 3
4. Specification 4
5. Panel Descriptions 5
 5.1. Transmitting Module 5
  5.1.1. Front Panel 5
  5.1.2. Rear Panel 5
 5.2. Receiving Module 6
  5.2.1. Front Panel 6
  5.2.2. Rear Panel 6
6. Installation 7
7. EDID Learning 7
8. Pin Definition 8
  8.1. HDMI™ 8
  8.2. CAT5 [RJ45] 8
9. Connection Diagram 9
10. Performance Guide 9
11. Notice 10
12. Safety Information 11
13. Warranty 12
14. Atlona Product Registration 12

INTRODUCTION

The AT-HD4-SI40SR boosts up your video/audio transmission distance up to 60m (200ft) in HDTV 1080i format, 40m (130ft) in HDTV 1080p format, and 20m (65ft) in HDTV 1080p with 36-bit color depth. AT-HD4-SI40SR also supports the most advanced 3D video format complaint with HDMI™ 1.4 specification and therefore guarantees the highest 3D video compatibility on the market. With only one cost effective Cat.5/5e/6 cable, users can readily extend HDTV sources from DVD players, Blu-ray Disc player, PS3, PC, and any other kinds of sources compliant with TMDS to distant display monitors including HDMI™/DVI enabled TV sets or LCD PC monitors. This flexibility makes HDCP compliant DVD players or PS3 transmit utmost high quality video and audio with a greater distance at the minimal cost, when integrating several components apart.

The AT-HD4-SI40SR includes two modules: transmitting module and receiving module. The transmitting module is used to capture the input HDMI™/DVI signals and carry the signals via one cost effective Cat.5/5e/6 cable. The receiving module is responsible for equalizing the transmitted HDMI™ signal. The transmission distance between the sending and receiving modules can be up to 60m (200ft) at HD 720p or 1080i; or 40m (130ft) at Full HD 1080p. With an 8-level equalization rotary control on the receiving module, users can adjust the equalization strength to the received HDMI™ signals accordingly, and therefore optimize the transmission distance between source and destination.

PACKAGE CONTENTS

- 1x AT-HD4-SI40SR (Transmitting and Receiving Modules)
- 2x 5V power supply unit
- 1x User's manual

FEATURES

- High Speed HDMI™ - Deep Color & full 3D support
- Extends the transmission up to 60m (200ft) from the HDMI source at HD 1080i or 720p 24-bit color
- Extends the transmission up to 40m (130ft) from the HDMI source at Full HD 1080p 24-bit color
- Extends the transmission length up to 20m (65ft) from the HDMI sources under Full HD resolution (1080p at 36-bit color depth)
- HDCP 1.1 compliant
- Minimizes the cable skew by adjustable 8-level equalization control
- Pure unaltered uncompressed 7.1ch digital HDMI over Cat.5/5e/6 cable transmission
- DTS-HD and Dolby TrueHD high bit rate audio support
- Allows cascading
- Wall mounting housing design for easy and robust installation
- Perfectly integrated with other HDMI over CAT5 series products

** The claimed transmission distance here is subject to the grade of installed cable(s), source device and display.*

** For over CAT5/COAX transmission, the cable(s) has to be solid, not stranded. Any keystone jack along the transmission path will kill the transmission performance significantly!*

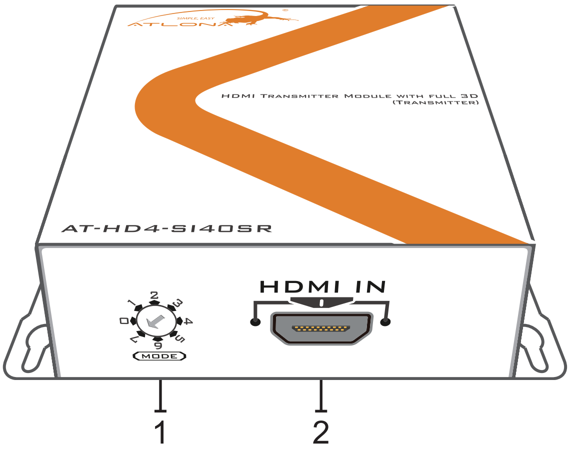
SPECIFICATIONS

Technical		**Transmitter**	**Receiver**
Role of usage		Transmitter [TX]	Receiver [RX]
HDMI™ compliance		High Speed HDMI™ - Deep Color & full 3D support	
HDCP compliance		Yes	
Video bandwidth		Single-link 6.75Gbps [225MHz]	
Video support		480i/p / 720p (50/60) / 1080i (50/60) / 1080p (24/30/50/60)	
HDMI™ over UTP transmission		Full HD (1080p)-130ft (40m) [CAT5e] / 165ft (50m) [CAT6] HD (720p/1080i)-165ft (50m) [CAT5e] / 200ft (60m) [CAT6]	
Audio support		Surround sound (up to 7.1ch) or stereo digital audio	
Signal Equalization		8-level digital control at RX	
Input TMDS signal		1.2 Volts [peak-to-peak]	
Input DDC signal		5 Volts [peak-to-peak, TTL]	
ESD protection		[1] Human body model — ±19kV [air-gap discharge] & ±12kV [contact discharge] [2] Core chipset — ±8kV	
PCB stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input		1x HDMI™; 1x 3.5mm	1x RJ45; 1x 3.5mm
Output		1x RJ45; 1x 3.5mm	1x HDMI™; 1x 3.5mm
HDMI™ connector		Type A [19-pin female]	
RJ45 connector		WE/SS 8P8C with 2 LED indicators	
Rotary control switch		EDID Mode	Signal level
Mechanical			
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	2.9” x 3.5” x 1” (75 x 90 x 25mm)	
	Package	6.9” x 10.6” x 3.1” (175 x 270 x 80mm)	
	Carton	1’3” x 1’6” x 1’ (370 x 450 x 300mm)	
Weight	Model	1.1 lbs (480g)	
	Package	1.7 lbs (780g)	
Fixedness		Wall-mounting case with screws	
Power supply		5V 2A DC	
Power consumption		1.5 W	
Operation temperature		32~104°F (0~40°C)	
Storage temperature		-4~140°F (-20~60°C)	
Relative humidity		20~90% RH (no condensation)	

PANEL DESCRIPTIONS

5.1. Transmitting Module

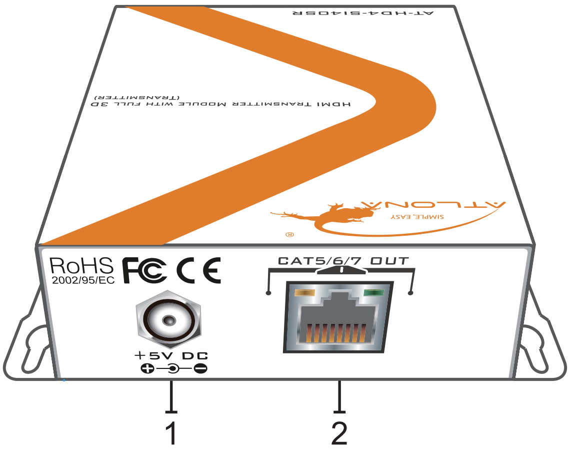
5.1.1. Front Panel


AT-HD4-SI40SR
HDMI TRANSMITTER MODULE WITH FULL 3D (TRANSMITTER)
HDMI IN
MODE
0 1 2 3 4 5 6 7
1
2

1. MODE: 0 - EDID Full-HD (up to 1080p@60) -24bit 2D video & 7.1ch audio – long distance
1 - EDID Full-HD (up to 1080p@60) – 24-bit 2D video & 2ch audio – long distamce
2 - EDID Full-HD (1080p@60) - 36bit 2D video & 7.1ch audio
3 - EDID Full-HD (1080p@60) - 36bit 2D video & 2ch audio
4 - EDID Full-HD (1080p@60) - 36bit 3D video & 7.1ch audio
5 - EDID HD (1080p@30)(1080i@50/60)(720p@50/60) - 24bit 2D video & 2ch audio
6 - EDID Full-HD (1080p@60) - 36bit 3D video & 2ch audio
7 - EDID learning mode

2. HDMI IN: Connects to a HDMI™ source with a HDMI™ male-male cable

5.1.2. Rear Panel

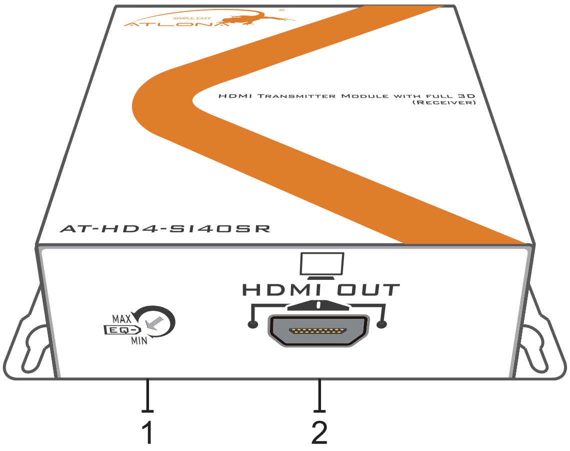

AT-HD4-SI40SR
HDMI TRANSMITTER MODULE WITH FULL 3D (TRANSMITTER)
RoHS 2002/95/EC
CAT5/6/7 OUT
+5V DC
1
2

1. +5V DC: Connect to 5V DC power supply.

2. CAT5/6/7 OUT: Plug in a Cat-5/5e/6/7 cable that needs to be linked to the Transmitting module.

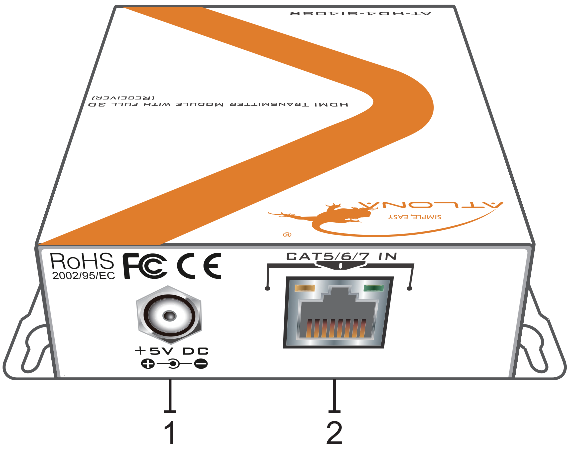
5.2. Receiving Module

5.2.1. Front Panel


ATLONA
HDMI Transmitter Module with full 3D (Receiver)
AT-HD4-SI40SR
HDMI OUT
MAX
EQ
MIN
1
2

1. **EQ:** Adjust the 8-level equalization control to the received HDMI™ signals. The HDMI™ signal level varies from MAX (strongest) to MIN (weakest) for respective transmission length from longest possible range to short distance. Please adjust the signal level from MIN to MAX and stop turning the rotary switch whenever the audio/video is playing normally.
2. **HDMI OUT:** Connect to HDMI™ display with a HDMI™ male-male cable.

5.2.2. Rear Panel


RoHS
2002/95/EC
CAT5/6/7 IN
+5V DC
1
2

1. **+5V DC:** Connect to 5V DC power supply.
2. **CAT5/6/7 IN:** Plug in a Cat-5/5e/6/7 cable that needs to be linked to the Receiving module.

INSTALLATION

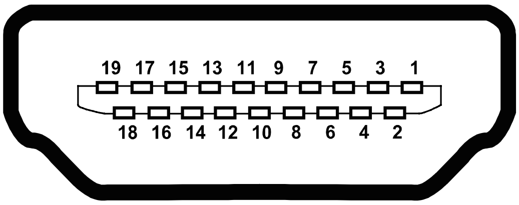
1. Connect a HDMI^{TM} or DVI source (such as a Blu-ray Disc player) to the transmitting module of AT-HD4-SI40SR.
2. Connect a HDMI^{TM} or DVI display (such as a LCD TV) to the receiving module of AT-HD4-SI40SR.
3. Connect a Cat-5/5e/6 cable between the transmitting and receiving modules.
4. Make sure this Cat-5/5e/6 cable is tightly connected and not loose.
5. Plug in 5V DC power supply module to the power jack of the receiving module of AT-HD4-SI40SR.
6. Plug in 5V DC power supply module to the power jack of the transmitting module of AT-HD4-SI40SR.
7. If you see flickering or blinking image on the display, please adjust the rotary control switch to improve the cable skew. MAX stands for the strongest HDMI^{TM} signal level for longest possible transmission length while MIN stands for the weakest HDMI^{TM} signal level for short transmission length. Please adjust the signal level from MIN to MAX and stop turning the rotary switch whenever the audio/video is playing normally.

EDID LEARNING

1. Turn off TX module and disconnect the Cat.5/5e/6/7 cable between TX and RX modules.
2. Connect the HDMI^{TM} display to **"HDMI IN"** on the TX module with a HDMI^{TM} cable.
3. Set **"MODE"** on the transmitting module of AT-HD4-SI40SR at 7.
4. Connect the TX module to the power supply.
5. The LED on the RJ45 of the transmitting module will dim and light again, which indicates the EDID learning procedure is complete.

PIN DEFINITION

8.1. HDMI™

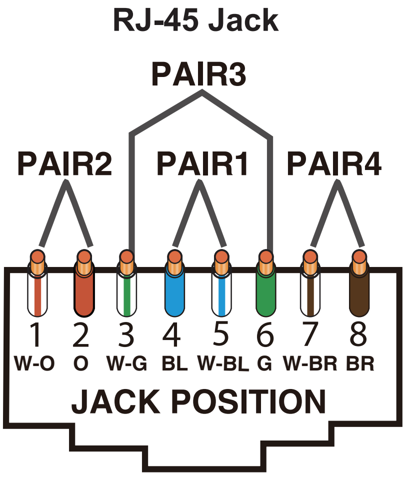

19 17 15 13 11 9 7 5 3 1
18 16 14 12 10 8 6 4 2

Type A (Receptacle) HDMI™

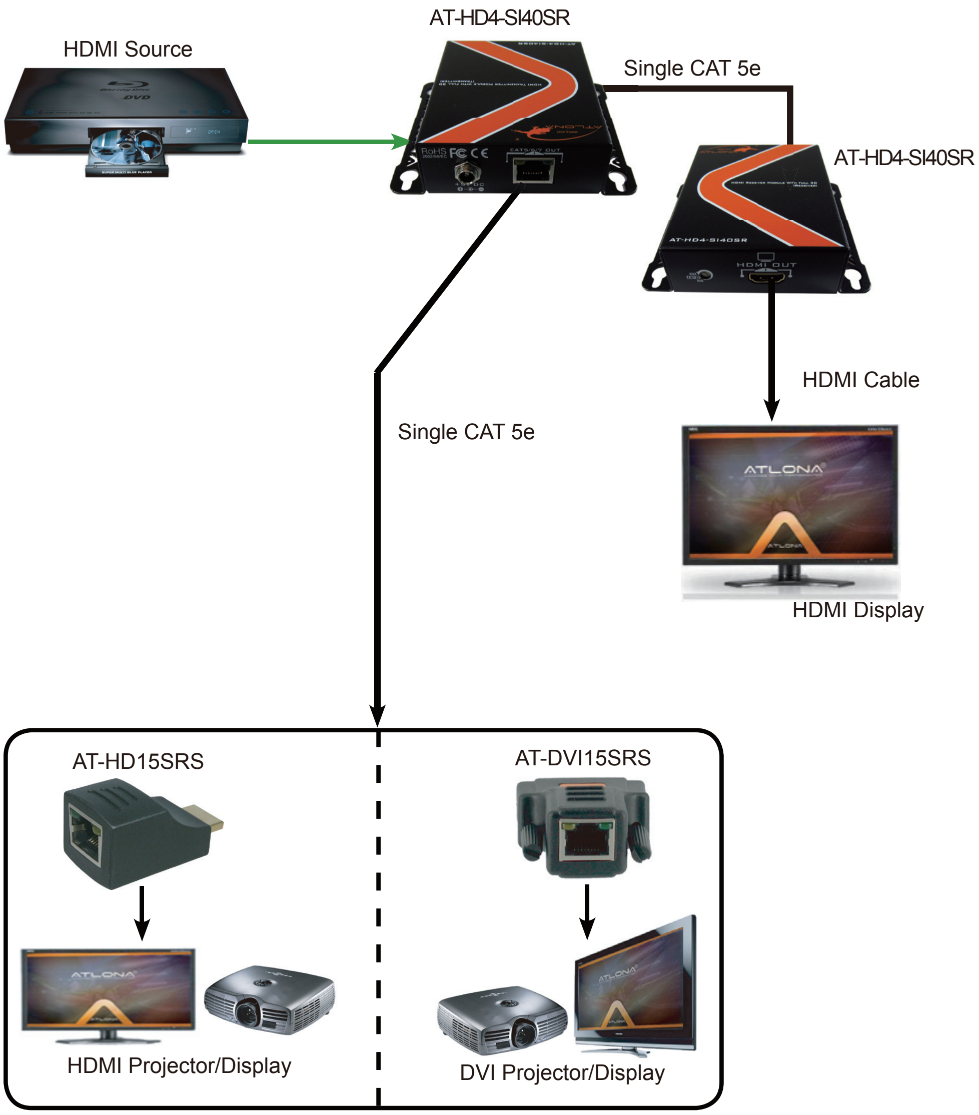
Pin 1	TMDS Data2+	Pin 8	TMDS Data0 Shield	Pin 15	SCL
Pin 2	TMDS Data2 Shield	Pin 9	TMDS Data0-	Pin 16	SDA
Pin 3	TMDS Data2-	Pin 10	TMDS Clock+	Pin 17	DDC/CEC Ground
Pin 4	TMDS Data1+	Pin 11	TMDS Clock Shield	Pin 18	+5 V Power
Pin 5	TMDS Data1 Shield	Pin 12	TMDS Clock-	Pin 19	Hot Plug Detect
Pin 6	TMDS Data1-	Pin 13	CEC		
Pin 7	TMDS Data0+	Pin 14	Reserved (N.C. on device)		

8.2. CAT5 [RJ45]

Data Link TIA/EIA-568-B		
PIN	**Color**	**Function**
1	W-O	TX0-
2	O	TX0+
3	G-O	TX1-
4	BL	TX2-
5	W-BL	TX2+
6	G	TX1+
7	W-BR	TXC-
8	BR	TXC+


RJ-45 Jack
PAIR3
PAIR2
PAIR1
PAIR4
1 2 3 4 5 6 7 8
W-O O W-G BL W-BL G W-BR BR
JACK POSITION

CONNECTION DIAGRAM


AT-HD4-SI40SR
HDMI Source
Single CAT 5e
AT-HD4-SI40SR
HDMI Cable
Single CAT 5e
HDMI Display
AT-HD15SRS
AT-DVI15SRS
HDMI Projector/Display
DVI Projector/Display

PERFORMANCE GUIDE

Performance rating		Type of category cable		
Wiring	Shielding	CAT5	CAT5e	CAT6
Solid	Unshielded (UTP)	***	****	*****
	Shielded (STP)	***	***	****
Stranded	Unshielded (UTP)	*	**	**
	Shielded (STP)	*	*	**
Termination		Please use **EIA/TIA-568-B** termination (**T568B**) at any time		

NOTICE

1. When adjusting the signal level on the receiver module, please dial the rotary control switch from MIN to MAX and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue that would shorten the product life significantly!
2. If the DVI or HDMI™ device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI or HDMI™ display EDID information.
3. All HDMI™ over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C & VG-870B.
4. The transmission length is largely affected by the type of Cat-5/5e/6 cables, the type of HDMI™ sources, and the type of HDMI™ display. The testing result shows solid UTP cables (usually in the form of 300m [1,000ft] bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP Cat-5e cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, solid UTP/ STP cables are the only viable choice.
5. EIA/TIA-568-B termination (T568B) for Cat-5/5e/6 cables is recommended for better performance.
6. To reduce the interference among the unshielded twisted pairs of wires in Cat-5/5e/6 cable, one can use shielded STP cables to improve EMI problems, which is worsen in long transmission.
7. Because the quality of the CAT5/6 cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of Cat-5/5e/6 cables. For desired resolutions greater than 1080i or 1280x1024, a Cat-6 cable is recommended.
8. If your HDMI™ display has multiple HDMI™ inputs, it is found that the first HDMI™ input [HDMI™ input #1] generally can produce better transmission performance among all HDMI™ inputs.

Possible Issues and Solutions:

1. No Audio/video Signal on the Display or Signal is going in and Out:
    a. Please test your RJ45 cables with a Fluke or similar tester to make sure that all the wires are connected and the distance is within the limits.
    b. If you are using patch panel or and RJ45 wall plates, the distance will be reduced, please do a direct connecting bypassing all additional equipment.
    c. Please try to re-terminate your CAT5/6/7 wire to 568B
    d. Please try adjusting EQ gain on the receiver unit
    e. Please try changing a mode on the transmitter to #0 or to #1 (depending on the audio format required
    f. Please go into the menu of the source device and select 720p/1080i or 1080p resolution instead of AUTO
    g. If the sync device is a projector or AVR, please try learning EDID, instructions are on the previous page

2. When connected between 3D player and 3D display, only able to see 2D image:
    a. Please try changing "MODE" on the transmitter module to 4 or 6
    b. Please go into the menu of the source device and enable 3D

3. Signal is Going In and Out when going into the AVR; however works well connected directly to the TV
    a. Please try Learning EDID of the AVR while the AVR HDMI™ out is connected to the display (both AVR and Display should be ON)
    b. Select "MODE" on the transmitter to # 0, #2 or # 4

Safety Information

Safeguards

To reduce the risk of electric shock, do not expose this product to rain or moisture

If the wall plug does not fit into your local power socket, hire an electrician to replace your obsolete socket.

Do not modify the wall plug. Doing so will void the warranty and safety features.

This equipment should be installed near the socket outlet and the device should be easily accessible in the case it requires disconnection.

Precautions

FCC regulations state that any unauthorized changes or modifications to this equipment, not expressly approved by the manufacturer, could void the user's authority to operate this equipment.

Operate this product using only the included external power supply. Use of other power supplies could impair performance, damage the product, or cause fires.

In the event of an electrostatic discharge this device may automatically turn off. If this occurs, unplug the device and plug it back in.

Protect and route power cords so they will not be stepped on or pinched by anything placed on or against them. Be especially careful of plug-ins or cord exit points from this product.

Avoid excessive humidity, sudden temperature changes or temperature extremes.

Keep this product away from wet locations such as bathtubs, sinks, laundries, wet basements, fish tanks, and swimming pools.

Use only accessories recommended by Atlona to avoid fire, shock, or other hazards.

Unplug the product before cleaning. Use a damp cloth for cleaning and not cleaning fluid or aerosols. Such products could enter the unit and cause damage, fire, or electric shock. Some substances may also mar the finish of the product.

Never open, remove unit panels, or make any adjustments not described in this manual. Attempting to do so could expose you to dangerous electrical shock or other hazards. It may also cause damage to your AT-HD4-SI40SR. Opening the product will void the warranty.

Do not attempt to service the unit. Disconnect the product and contact your authorized Atlona reseller or contact Atlona directly.

Warranty

Limited Warranty

Atlona Technologies warrants that (a) its products (the AT-HD4-SI40SR) will perform substantially in accordance with the accompanying written materials for a period of 3 years from the date of receipt and (b) that the product will be free from defects in materials and workmanship under normal use and service for a period of 3 years. In the event applicable law imposes any implied warranties, the implied warranty period is limited to 3 years from the date of receipt. Some jurisdictions do not allow such limitations on duration of an implied warranty, so the above limitation may not apply to customers that fall within those areas.

Customer Remedies

Atlona Technologies' and its suppliers' entire liability and Customer's exclusive remedy shall be, at Atlona Technologies' decision, either return of the price paid for the product, repair, or replacement of the product that does not meet this Limited Warranty and which is returned to Atlona Technologies with a copy of the Customer's receipt. This Limited Warranty is void if failure of the product has resulted from accident, abuse, misapplication, or natural occurrence. In example but not limited to: power surges (electrical storms, local power outage), dropping the product (or items on the product), contact with fluids, and physical misconduct (i.e. kicking or punching). Any replacement product will be warranted for the remainder of the original warranty period.

No other warranties

To the maximum extent permitted by applicable law, Atlona Technologies and its suppliers disclaim all other warranties, either expressed or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose, with regard to the product and any related written materials. This Limited Warranty gives customer specific legal rights. Customers may have other rights depending on the jurisdiction.

No liability for damages

To the maximum extent permitted by applicable law, in no event shall Atlona Technologies or its suppliers be liable for any damages arising out of the use of or inability to use this product, even if Atlona Technologies has been advised of the possibility of such damages. Such damages include but are not limited to: special, incidental, consequential, or indirect damages for personal injury, loss of business profits, business interruption, loss of business information, or any other pecuniary loss. Atlona Technologies' and its suppliers' entire liability under any provision of this agreement shall be limited to the amount actually paid by you for the product. Some Jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damage. The above limitations may not apply to you in such jurisdictional cases.

Atlona Product Registration

Thank you for purchasing this Atlona product. - We hope you enjoy it and will take an extra few moments to register your new purchase.

Registration creates an ownership record if your product is lost or stolen and helps ensure you'll receive notification of performance issues and firmware updates.

At Atlona, we respect and protect your privacy, assuring you that your registration information is completely secure. Atlona product registration is completely voluntary and failure to register will not diminish your limited warranty rights.

To register go to: http://www.atlona.com/registration